



**“It’s written *niistó* but it sounds
like KNEE STEW.”**

**Blackfoot orthography:
Some problems and possible solutions**

Inge Genée

Department of Modern Languages and Linguistics

University of Lethbridge

inge.genée@uleth.ca

University of
Lethbridge



Social Sciences and Humanities
Research Council of Canada

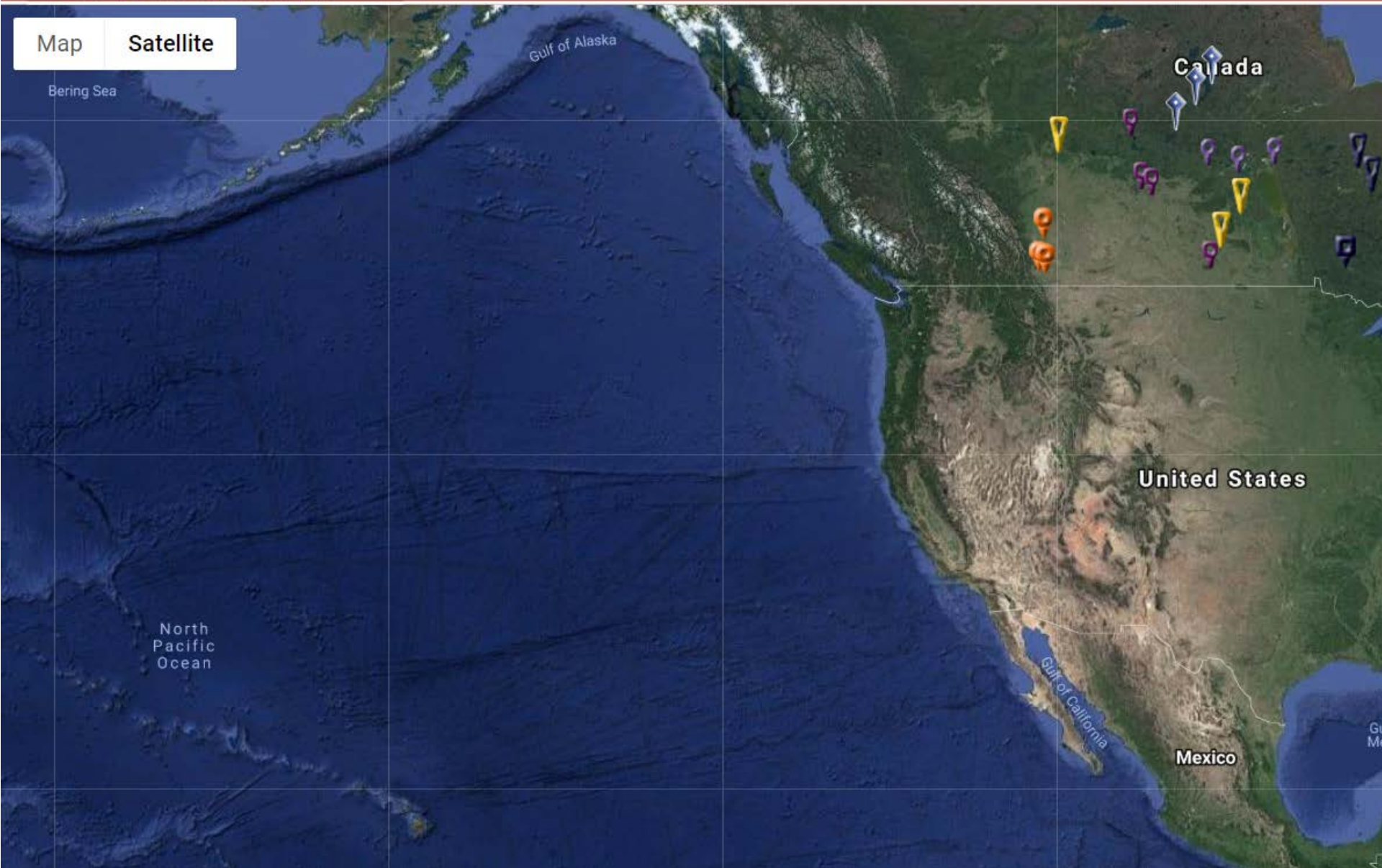
Conseil de recherches en
sciences humaines du Canada

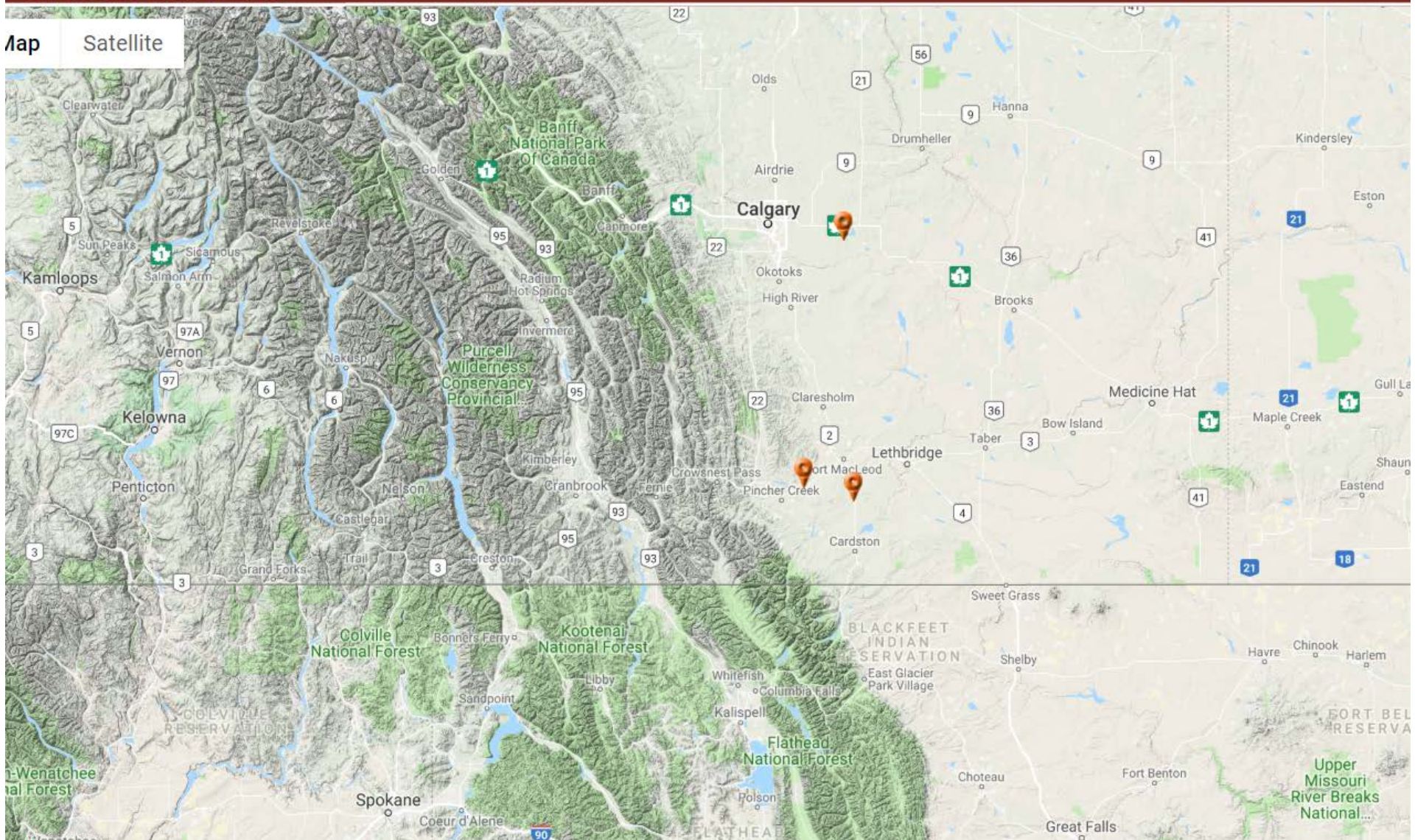
Canada

Acknowledgements

Steffi Becker Dudley Bernice Big Bull Jessie Black Water Kim
Black Water Heather Bliss Peter and Stella Chief Calf Natalie
Creighton Lisa Crowshoe Rosaline Crow Shoe Shirlee Crow
Shoe Francis First Charger Mary Fox Don Frantz Inge Genee
Kristen Healy Rachel Hoof Beverly Hungry Wolf Janine
Jackson Shelby Johnson Marie-Odile Junker Kaskia Many
Chief Philomena Melting Tallow Madoka Mizumoto Mizuki
Miyashita Madeline Neufeld Dan O'Donnell Claire Owen
Mahaliah Peddle Peter Pankonin Robert Provost Nicole
Rosen Blaise Russell Lena Russell Meagan Schritt Myles
Shirakawa Conor Snoek Amanda Thom Carl Singer Shawn
Singer William Singer III Joslin Smith Veronica Smith Delasie
Torkornoo Natalie Weber Brittany Wichers Jo Ann Yellow
Horn Pauline Yellow Horn Fernando Zúñiga

ALGONQUIAN LINGUISTIC ATLAS





Introduction

- Isolated attempts to write Blackfoot in 19th – 20th centuries by early traders, explorers and missionaries. Also adaptation of Cree syllabics (Frantz 1993).
- Roughly phonetic transcription systems used by linguists such as C.C. Uhlenbeck (1911, 1912, 1938) did not result in attempts to design orthography.
- First serious attempt at systematic orthography by Frantz in 1960's-1970's (Frantz 1978, 1993, 2017).
- Frantz orthography officially accepted by Nation schoolboards in Canada in 1975 and used for most educational materials.
- Slightly different but related orthography in use in Montana.

Linguistic principles of Frantz orthography

- Use only letters and symbols that are easy to find on typewriter or computer keyboard.
- Represent only phonemes, not allophones.
- Preserve morphological transparency where not contradicted by phonology.
- Optimize learnability for native speakers of Blackfoot whose primary literacy is based on English.

(Frantz 1978)

Consonant **/phonemes/** and <letters>

	Bilabial	Coronal	Dorsal	Glottal
nasal	/m/ = <m> /m:/ = <mm>	/n/ = <n> /n:/ = <mm>		
plosive	/p/ = <p> /p:/ = <pp>	/t/ = <t> /t:/ = <tt>	/k/ = <k> /k:/ = <kk>	/ʔ/ = <'>
fricative		/s/ = <s> /s:/ = <ss> /s::/ = <sss>	/x/ [ç] = <h> (post-vocalically)	/h/ = <h> (word-initially)
affricate		/t^s/ = <ts>	/k^s/ = <ks>	
glide	/w/ = <w>		/j/ = <y>	

Vowel **/phonemes/** and <letters>

/i/ [ɪ] = <i> /i:/ = <ii>		/u/ [o] [ʊ] = <o> /u:/ [o:] = <oo>
/æ/ [ɛ] [e] = <ai>		/ɔ/ = <ao>
	/a/ [ʌ] = <a> /a:/ = <aa>	

Community-based factors against orthography adoption

- “The main non-linguistic factor in orthography development is social, political, and cultural acceptability. [...] If a community does not approve the orthography, then it will not be used and will therefore fail” (Jany 2010: 235).
- Frantz orthography was not developed in consultation with community; often referred to as “the linguistic system” or “the standard system”.
- Alternate impressionistic systems often referred to as “phonetic writing”.
- Nevertheless widespread consensus that education system should work with the standard we have.

Linguistic factors against orthography adoption

- Speaker and learner intuitions about value of letters entirely based on English.
- Linguistic “internalized colonialism”: English values of letters are considered “the right ones”.
- Impressionistic spellings show this clearly:

Blackfoot word	Meaning	Frantz spelling	Impressionistic spelling
[ni:stó]	‘I, me’	niistó	knee stew
[pí:ta:]	‘eagle’	píítaa	bee dah
[a:kí:]	‘woman’	aakíí	ah ghee
[ka:áxs]	‘my grandparent’	kaaáhsa	gaas
[kuʔtsís]	‘your (sg) hand’	ko’tsisi	goot tsis
[kitxpó:si:min:o:n]	‘our (incl) cat’	kitohpóósiminnoona	ghit boo seam min noon
[kitá:ksowato:ʔp]	‘you (sg) will eat it’	kitáaksowatoo’pa	ghit dawk ksou wa doop
[é:simi]	‘s/he is drinking’	áisimiwa	eh sim mii
[aká:ksimi]	‘s/he finishing drinking’	akááksimiwa	aw kaa kis sim mii
[nimá:ta:ksim]	‘I’m not going to drink’	nimáátaaksimi	nimah dawk simm
[Is:ʌpó:mxksika]	‘Crowfoot’	issapóómahksika	CHAPO-MEXICO

Linguistic challenges in standard orthography

- **Oral stops:** unaspirated /p/ /t/ /k/ sound like /b/ /d/ /g/.
- **Velar fricative:** /x/ not in English; several allophones incl. [ç] [ʃ] [s]. Also [k] in younger speakers.
- **Glottal stop:** /ʔ/ often not heard because not phonemic in English.
- **Geminates:** often not heard because length is not distinctive in English.
- **Vowels:** all IPA-based vowels are counterintuitive to speakers of English.

Linguistic challenges in standard orthography

- ***Pitch accent***: has different acoustic effect than English stress and is therefore often not heard reliably (Miyashita & Fish 2017; Fish 2018); not marked in standard orthography, but would be helpful for learners.
- ***Spacing***: long words are hard to read; speakers often insert spaces between syllables.
- ***Variation***: how to balance need to respect individual and dialect differences with need for consistent representation.

Mitigations in Blackfoot Digital Dictionary

The screenshot shows a web browser window with the address bar displaying "dictionary.blackfoot.atlas-ling.ca/#/help". The page features a header with a home icon and the text "Blackfoot dictionary" over a background image of a rocky landscape. Below the header is a search bar with the placeholder text "Type something you want to look up...". To the left of the search bar are tabs for "English to Blackfoot", "Blackfoot to English", and "Advanced Options". Below the search bar are links for "Results", "Credits", "Help", and "Browse". A teal banner across the page reads "UNDER ONGOING DEVELOPMENT".

How to use the online dictionary:

1. Type what you are looking for in the search box
2. Choose:
 - English to Blackfoot if the text typed is in English
 - Blackfoot to English if the text typed is in Blackfoot
 - Advanced Options to modify the search process and results
3. Click on the to perform the search

Help videos

Below are some help videos to help you work with the dictionary even better. Check them out!

English to Blackfoot search

Blackfoot to English search

Relaxed search features (Blackfoot to English search)

Mitigations in Blackfoot Digital Dictionary

1. Relaxed search
2. Pronunciation guide / alternate spellings
3. Multiple audio files

1a. Relaxed search (current)

Current default relaxed search in Blackfoot-to-English search bar ignores

- pitch accent marks
- geminates
- glottal stops

Typing ***ottaass***, ***o'tas***, ***otas*** will all bring up ***óta's*** 'mount'.

Blackfoot: online dictionary: Home x +


Not secure | dictionary.blackfoot.atlas-ling.ca/#/results

á í ó ' ottaass

English to Blackfoot Blackfoot to English Advanced Options

Results Credits Help* Browse

Entries 2

▼ **óta's nad** 
horse of, mount

▶ **ota'si vai**
own a horse


Inflected Entries 2

óta's nad

horse of, mount

nóta'siksi my horses plural

óta'si his horse possessed



1b. Relaxed search (future): non-existing letters

TYPED	RESULT
b	p
d	t
g	k
e, ee	i, ii
u	a
x	ks

1c. Relaxed search (future): non-existing letter combinations

TYPED	RESULT
bh	p
dh	t
gh	k
ea	ii
ch	h
eh	ai
kn	n

1d. Relaxed search (future): not currently solvable

- <ah> for /a:/ instead of /ax/, e.g. *bee dah* for *piitaa*
- <aw> for /a:/ or /ɔ:/ instead of <aa> or <ao>, e.g. *nimah dawk simm* for *nimáátaksimi*
- missing <Vh> = /(V)x/, e.g. *nit boos* for *nitohpoos*, *gaas* for *kaaahsa*
- <y> for <i>, e.g. *hunya* for *hannia*
- and many other spelling variants...

2. Pronunciation guide

- Dictionary entries and sound files have additional field for alternate spellings or pronunciation guides.
- Benefit: shows respect for spellings used by respected speakers and teachers
- Challenges:
 - can potentially lead to unlimited idiosyncratic spellings with questionable benefit.
 - can be confusing for new learners to have to deal with multiple orthographies.

óki part

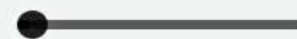
speaker variants: **óóki** , **óókia**

hello (greeting), well (discourse device), okay now (discourse device)

▶ More information



0:00 / 0:01



OH KEE



▼ Example



Dictionary

Grammar

Stories

Resources

Contributors

Contact

Blog

Publications

Copyright

sináákia'tsis | book

This is a possessive paradigm for the inanimate noun *sínaakia'tsis* 'book', as produced by Beverly Little Bear Hungry Wolf in July and August 2017. If you hover over a Blackfoot word, a pronunciation guide will be available. Pronunciation guides are provided by Beverly Little Bear Hungry Wolf (received in Jul-Aug 2017). Please note: the forms in this paradigm contain an 'm' where an 's' is expected. This 'm' is used to indicate possession. Please see Frantz (2017, p. 79) for more information.

This the paradigm for the singular possessed object, i.e. 'book':

Possessive paradigm for 'book'

	Blackfoot word	English	Person
	<i>nisínaakia'ts</i>	nee sin na geaht tseam k'	1SG
	<i>kisínaakia'tsiimi</i>	'Your (singular) book'	2SG
	<i>osínaakia'tsiimi</i>	'His/her book'	3SG
	<i>nisínaakia'tsiiminnaani</i>	'Our (not including you) book'	1PL

Search

Grammar

Nouns

Animacy

Dependent nouns (possession)

Noun Inflection

Number

Possession

Paradigms

3. Multiple audio

- Strive to have multiple audio files for each entry and example.
- Benefits:
 - De-emphasizes writing to focus on actual pronunciation
 - Normalizes pronunciation variation in the presence of consistent spelling
- Challenges:
 - Potentially unlimited: When is it done? When do we have enough recordings?
 - Resource / manpower limitations.

dictionary: Home

+

Not secure | dictionary.blackfoot.atlas-ling.ca/#/results

eagle

3

ksikkikhini na

bald eagle

otaikimmio'tokaan na

golden eagle

piitaa na

eagle, golden eagle

eagle catcher

1

piitaa na

eagle, golden eagle

Aquila chrysaetos


More information

poksipiitaiksi small eagles plural

0:01 / 0:01

0:01 / 0:01

0:01 / 0:01



Inge Genée – Blackfoot orthography - ICLDC 6 - March 1 2019

Concluding remarks

- Adoption of standard orthography remains shaky even 40 plus years after official adoption
- Contributing factors include general lack of Blackfoot literacy practices and knowledge of other languages
- Literacy practices and intuitions are entirely rooted in English
- Print literacy is not a priority to most Blackfoot speakers and learners, due to emphasis on oral language
- Blackfoot Language Resources and Digital Dictionary project attempts to mitigate some of the most obvious orthography challenges, but can ultimately not compete with lack of trained teachers and lack of community consensus and implementation.



Kiannimayi,
iihkakotsiwa

‘And that’s it, this is the end.’
(lit.: ‘it ceases boiling’)

References

- Fish, Natoosi. 2018. Pedagogy of pitch in L2 Blackfoot. Unpublished paper, University of Montana. Undergraduate Theses and Professional Papers. 193. <https://scholarworks.umt.edu/utpp/193>
- Frantz, Donald G. 2017. Blackfoot grammar. 3rd edn. Toronto: University of Toronto Press.
- Frantz, Donald G. 1978. Abstractness of phonology and Blackfoot orthography design. In McCormack, William C. & Wurm, Stephen A. (eds), *Approaches to language: Anthropological issues*, 307-326. The Hague: Mouton.
- Frantz, Donald G. 1993. Blackfoot writing systems. Unpublished paper, University of Lethbridge.
- Genée, Inge and Donald G. Frantz (eds). 2015-2018. Blackfoot Digital Dictionary. <http://dictionary.blackfoot.atlas-ling.ca>.
- Genée, Inge and Marie-Odile Junker. 2018. The Blackfoot Language Resources and Digital Dictionary project: Creating integrated web resources for language documentation and revitalization. *Language Documentation and Conservation* 12: 298-338. <http://hdl.handle.net/10125/24771>.
- Grenoble, Lenore & Lindsay Whaley. 2006. *Saving languages: An introduction to language revitalization*. Cambridge: Cambridge University Press.
- Grimes, Joseph & Raymond Gordon, Jr. 1980. Design of new orthographies. In James Kavanagh & Richard Venezky (eds.), *Orthography, reading, and dyslexia*, 93-103. Baltimore, MD: University Park Press.
- Guérin, Valérie. 2008. Writing an endangered language. *Language Documentation & Conservation* 2(1). 47-67.
- Hinton, Leanne. 2001. New writing systems. In Leanne Hinton & Ken Hale (eds.), *The green book of language revitalization in practice*, 239-250. San Diego, CA: Academic Press.
- Hornberger, Nancy H. (ed.). 1997. *Indigenous literacies in the Americas: Language planning from the bottom up*. Contributions to the Sociology of Language #75. Berlin: Mouton de Gruyter.
- Jany, Carmen. Orthography design for Chuxnabán Mixe. *Language Documentation and Conservation* 4: 231-253. <http://hdl.handle.net/10125/4481>.
- Jany, Carmen. 2009. Digital Fluency and Participatory Research: The Chuxnabán Mixe Online Dictionary. Santa Barbara Papers in Linguistics: 12th Annual Workshop on Native American Languages. University of California, Santa Barbara.
- Miyashita, Mizuki and Natoosi Fish. 2017. Guiding Pronunciation of Blackfoot Melody. In J. Reyhner, J. Martin, L. Lockard & W.S. Gilbert. (Eds.). *Honoring Our Teachers*, 203-210. Flagstaff, AZ: Northern Arizona University.
- Rehg, Kenneth. 2004. Linguists, literacy, and the law of unintended consequences. *Oceanic Linguistics* 43(2). 498-518.
- Rice, Keren and Saxon, Leslie. 2002. Issues in standardization and community in first nations lexicography. In Frawley, William & Hill, Kenneth C. & Munro, Pamela (eds.), *Making dictionaries: Preserving indigenous languages of the Americas*, 125-154. Berkeley: University of California Press.
- Sebba, Mark. 2007. *Spelling and society: The culture and politics of orthography around the world*. Cambridge: Cambridge University Press.
- Seifart, Frank. 2006. Orthography development. In Jost Gippert, Nikolaus P. Himmelmann & Ulrike Mosel (eds.), *Essentials of language documentation*, 275-299. Berlin: Mouton de Gruyter.
- Suslak, Dan. 2003. The Story of ö: Orthography and cultural politics in the Mixe Highlands. *Pragmatics* 13(4). 551-563.
- Venezky, Richard L. 2004. In search of the perfect orthography. *Written Language & Literacy* 7(2). 139-163.